SUNIX

Version 1.0

Powered USB HUB

User's Manual

Plug into A
Brand-new World

www.sunix.com.tw

First Edition, October 2008

Powered USB Hub

User's Manual

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1.
Introduction

Thank you for purchasing the Powered USB High Speed Hub, which is designed to enable users accessing USB devices without additional external power supply connection. SUNIX 4-Port Powered USB 2.0 High Speed Hub provides a simple and affordable way to add up to four 2.0 compliant Powered USB ports to your PC. With this plug and play upgrade, it is easy to connect POS peripherals which require more than the normal power provided by a standard USB connection, thus eliminating the need for cumbersome power supply bricks. In addition, SUNIX Powered USB Hub is backward compatible to regular USB 1.1 and USB 2.0 devices.

The following topics are covered in this chapter:

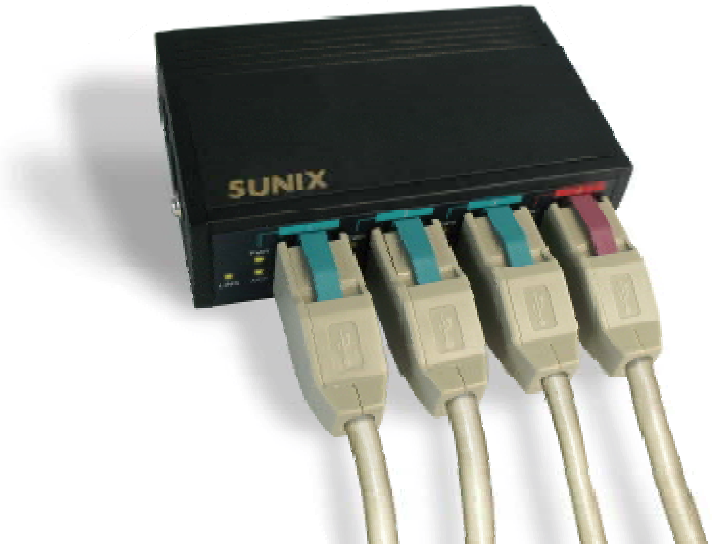
- **Overview**
- **Package Checklist**
- **Product Features**
- **Product Specifications**

Overview

USB allows peripheral devices to exchange data with a PC and also to receive power over the USB bus. Unfortunately, the bus supplied power is limit to 2.5 Watts (0.5A @ +5V) per port, sufficient to provide enough power to input devices, web cameras among other low power devices. Other devices like printer, displays, pin pads, external CD-ROM and hard drives still require an external power supply. Here comes Powered USB, it eliminates the need for additional power supplies. Powered USB provides the necessary power as well as the communication signals over a hot pluggable cable. In addition, the Powered USB solves the physical host side cable locking problem associated with the standard USB connector by providing a host cable locking mechanism.

SUNIX Powered USB High Speed Hub provides a convenient and affordable way to add up to 4 Powered USB 2.0 ports on your PC. Devices which require more power than provided by the regular USB interface can be easily installed and used with no need for an additional power supply. SUNIX PUB1300H Powered USB Hub provides both +12V and +24VDC through the power adapter directly to its 4 Powered USB ports. Besides it is also backward compatible to regular USB 1.1 and USB 2.0 devices.

POS systems become more and more stylish now days, with limited space for the terminal and all peripherals inside. Safe your valuable space and get rid of the peripherals' power supplies using the Powered USB Hub. This product is the ideal solution for today's point of service systems.



Package Checklist

Please check if the following items are present and in good condition upon opening your package. Contact your vendor if any item is damaged or missing.

1. Powered USB Hub
2. User's Manual (This document)
3. Clamped USB2.0 High Speed Cable (1pcs)
4. Power Adapter with 6-pin Mini-Din Connector Type: (out " – " , inside " + ")
   - +24VDC @ 2A (1pcs)
   - +12VDC @ 4A (1pcs)
5. Power Cord (2pcs)

Optional Accessory:

1. Wall-Mount Kit

2. Din-Rail Kit

Note:

Optional accessory does not include in the standard packing. If any accessory requests, please contact your vendor for detail

Product Features

- Compliance with Universal Serial Bus (USB) Specification Revision 2.0
- High performance NEC USB2.0 Hub controller on board.
- Add 4 external Powered USB ports on your PC.
- Powered USB port supports +24VDC and +12VDC power output.
- Each PoweredUSB ports built-in short circuit and over current protection.
- External LED indicates system status and power output.
- Support USB peripheral power control by stand-by and wakeup commands.
- Built-in USB panel mount design to avoid USB cable comes off problem.
- Rugged and slim aluminum chassis design meets IP30 standard.
- Optional accessory for easy DIN-Rail and Wall-Mounting ability.
- Supports USB device Hot-Swapping and Plug-n-Play function.
- Certified by RoHS CE, FCC Class B approval.
- Support Linux, MAC, and Microsoft Windows 9x, 2000, XP, 2003 Vista, 2008 (X86/X64) operation system.

Product Specifications

- **USB Communication**

Interface	Universal Serial Bus 2.0
Controller	NEC UPD720104
IRQ & IO	Assigned by System
Speed	Data Transfer rate of 1.5, 12, and 480Mbps
External Powered USB Port	+24VDC / 1-port / Maximum 2A +12VDC / 3-port / Maximum 4A
Protection	+24VDC USB port built in 3A PTC fuse +12VDC USB port built in 1.55A PTC fuse
Board Connector	Powered USB Connector

Power Input

Power Consumption	150mA @ 5VDC (Non-Loading)
Power Input	+24VDC / 2A / 48W (From Power Adapter) +12VDC / 4A / 48W (From Power Adapter) +5VDC / 0.5A / 2.5W (From USB Bus Power)
Microsoft Server	NT/2003/2008 (X86/X64)
Linux	Linux 2.4.x / 2.6.x
MAC	Version 10.2 or later

Driver Support

Microsoft Windows	95/98/ME/2000/XP/Vista (X86/X64)
Microsoft Embedded	CE5.0/XP Embedded
Microsoft Server	2003/2008 (X86/X64)
Linux	Linux 2.4.x / 2.6.x
MAC	MAC Version 10.2 or later

Regulatory Approvals

Hardware	EN55022 Class B, EN55024, EN61000-3-2, EN61000-3-3, FCC Part 15 Class B,
Green	RoHS

Operation Environment

Operation Temperature	0 to 60°C (32 to 140°F)
Operation Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)

Mechanical

Dimension	110 x 70 mm
Enclosure	IP30 standard
Material	Aluminum and Polycarbonate (PC)
Gross Weight	165 gram (5.82 ounce)
Mounting	DIN Rail and Wall Mount Kit **(Optional Accessory)**

2.

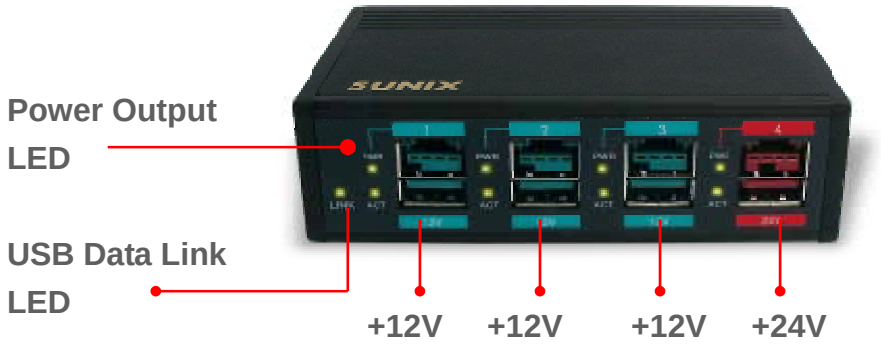
Hardware Installation

This chapter includes information about hardware installation and mechanical drawings for Powered USB High Speed Hub. The following topics are covered:

- **Hardware Installation**
- **Pin Assignments**

Hardware Installation

LED Display



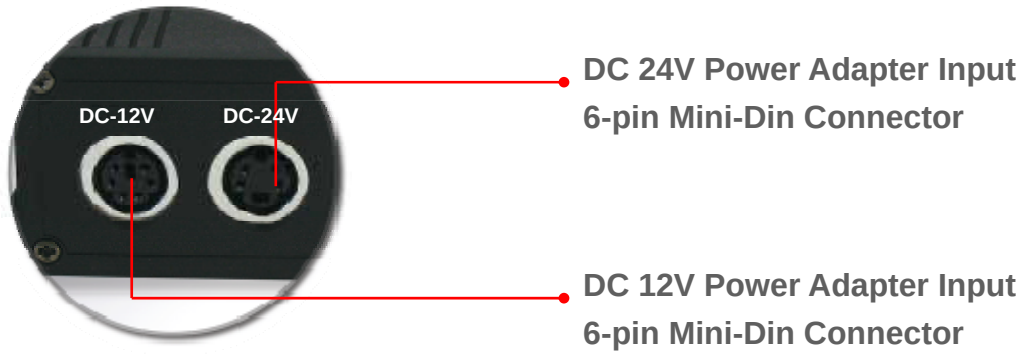
Name	LED ACT	Description
LINK	Green	USB connection between computer and Hub is ready
	Do NOT Light	USB connection between computer and Hub is NOT ready
ACT	Green	USB data is communicating between Powered USB device, Hub, and computer.
	Do NOT Light	There's no any data communication between computer and Hub
PWR	Green	12 or 24VDC power outputs to Powered USB device.
	Do NOT Light	There's no any power output to Powered USB device.

Earth Ground Connection

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). In order to reduce the environmental background noise, we have added earth ground cooper on the Hub side panel. User can run the ground connection from the Hub ground screw to the grounding surface.

Power Adapter Connection

Plug the DC plug into the DC jack and plug the AC adaptor into an electrical outlet.



Please connect both +24VDC and +12VDC power adapters to the 6-pin Mini-Din connector separately. If you do not need any +24VDC power output to your powered USB device, you can skip the +24VDC power adapter using. You can NOT plug the +24VDC power adapter to +12VDC Mini-Din connector.

Note:

1. +24V power adapter provides 2A total 48W to +24VDC powered USB device. +24VDC powered USB channel built in 3A PTC fuse.

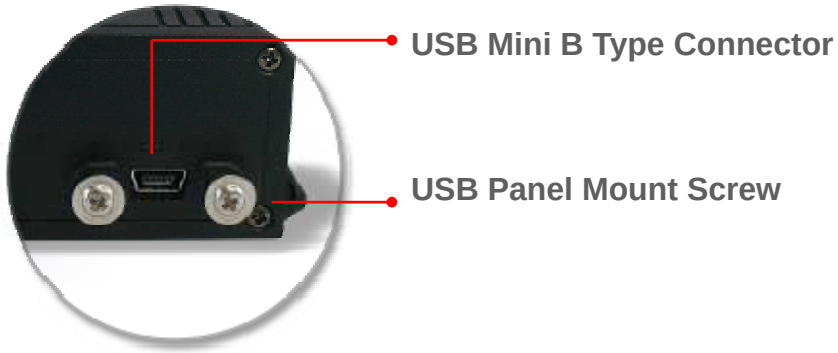
2. +12V power adapter provides 2A total 48W to all +12VDC powered USB devices using. Each +12VDC powered USB channel built in 1.55A PTC fuse.

3. The PTC may temporarily allow higher rate of power current to be drained. Typically, a PTC will shut off after approximately 15 seconds drawing more than the fuse tolerant current specification. The PTC will turn off the power for each individual port if an unusual overload is sustained.

Safety First
To avoid damaging, make sure to disconnect power connection before wiring or disposing the powered USB Hub.

USB Connection

Plug USB connector type A into the USB port of host computer, and plug USB connector Mini B Type into the upstream port of the hub.



With SUNIX screw-style panel mount connector and clamped cable design, PUB1300H build USB functionality into a secure and efficient fixed port. From basic port re-routes in a PC, to connections at podiums and kiosks, panel-mount cable is a great way to keep your connections extremely reliable, safety and professional.

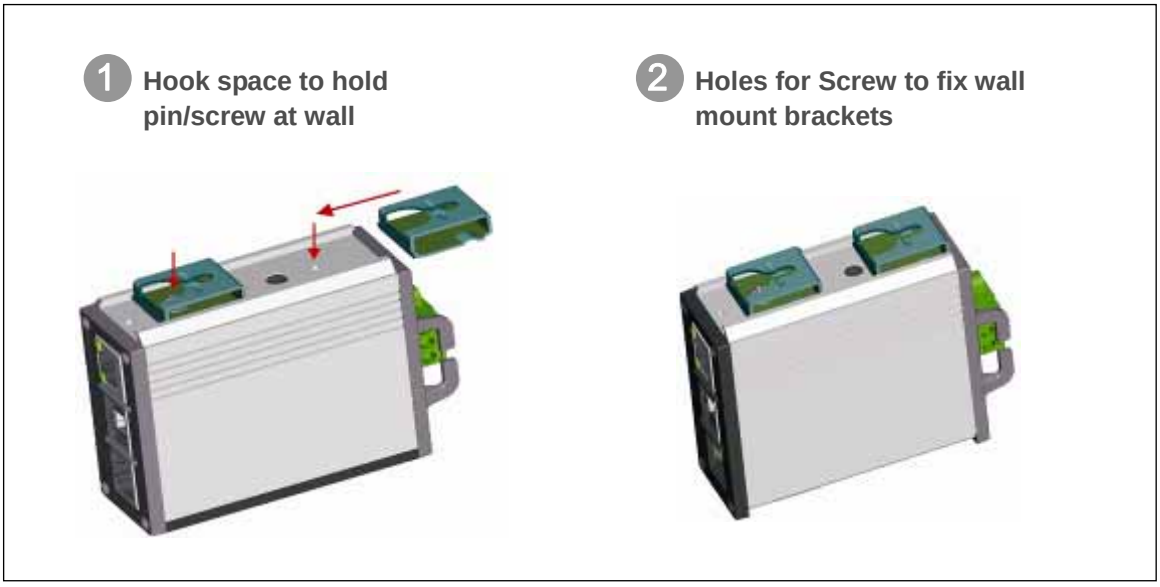
Please follow up below steps to complete the USB connection between computer and Hub.

1. Turn both screws to the lift to loosen its.
2. Plug the clamped USB2.0 cable into USB Mini B Type connector.
3. Turn both screws to the right to tighten and fix the USB connector.
4. Connect the other side of USB cable A type connector to your computer.

Wall Mount

The plastic Wall Mount kit is optional and available upon request. Follow the steps below to install the Hub with the wall mounting plate.

1. To remove the DIN-Rail clip from the Hub, loosen the screws from the DIN Rail clip.
2. Place the wall mounting plate on the rear panel of the Hub.
3. Use the screws to tighten the wall mounting plate onto the Hub.
4. Use the hook holes at the corners of the wall mounting plate to hang the Hub onto the wall.
5. To remove the wall mounting plate, reverse the steps above.



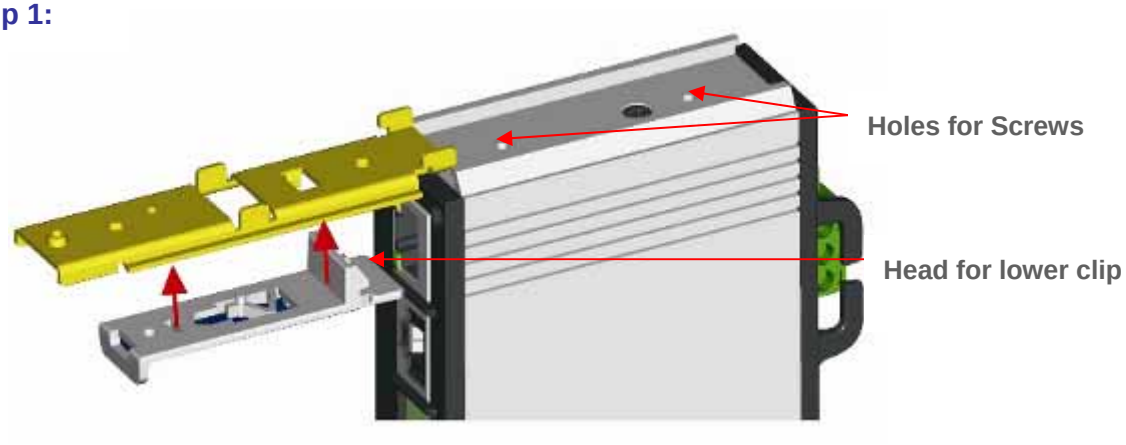
Note:

Wall Mount Kit is a optional accessory does not include in the standard packing. If any accessory requests, please contact your vendor for detail.

DIN Rail Mount

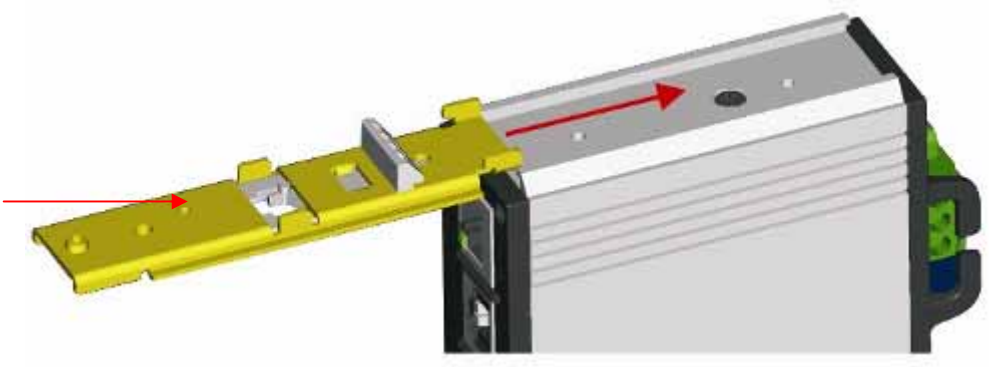
The plastic DIN-Rail attachment plate should already be fixed to the rear panel of the Hub when you take it out of the box. If you need to attach the DIN-rail plate, see the steps as shown in below diagrams.

Step 1:



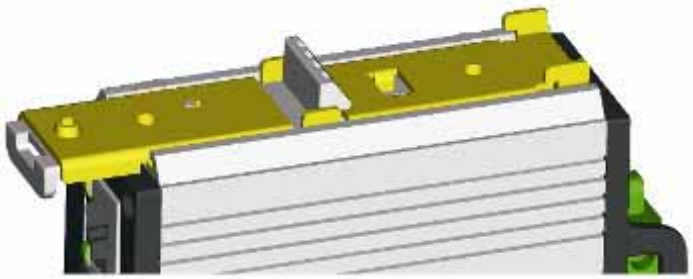
The DIN Rail kit consists of two brackets as shown in the figure. Affix the two brackets together by inserting the off-white bracket's mounted head in yellow bracket.

Step 2:



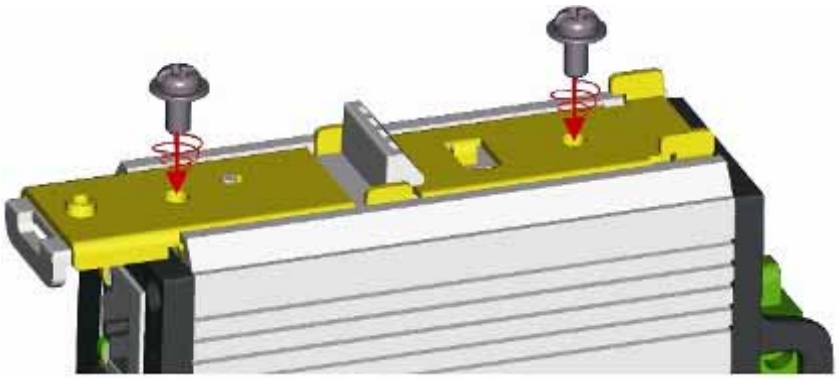
You will hear the "click" sound once the head is completely placed and fixed. At this stage, slide this DIN Rail kit to Hub's back panel. Carefully, align the holes provided for screws.

Step 3:



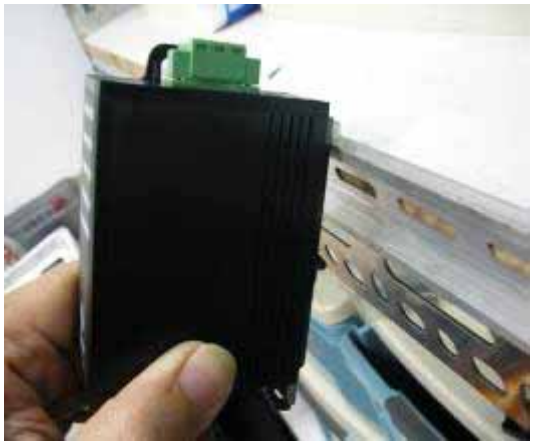
Use four-pin screwdriver to tighten the two screws. Failing to do so, may cause falling of Hub from the DIN Rail.

Step 4:

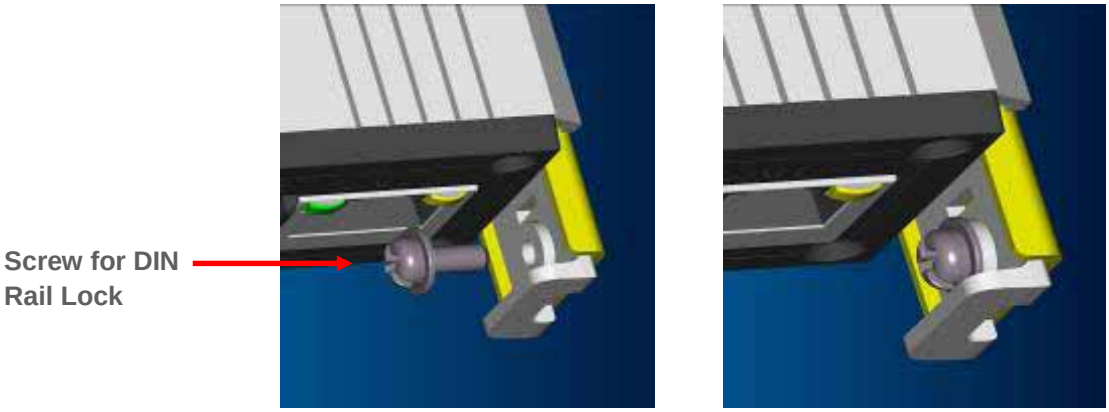


Tighten the third screw at the bottom by turning the Hub at his back.
To remove the DIN Rail kit, reverse the above steps.

Attaching the Hub to the DIN-rail is easy: just align and hook it over the top rail, making sure that the rail edges at top fixed into the space of DIN Rail kit.



Once the heads fixed, then push down and press the Hub forward to snap into the bottom rail, as shown in the figures above. Once the Hub is fixed, you can use the screw at bottom to lock the Hub with DIN Rail.

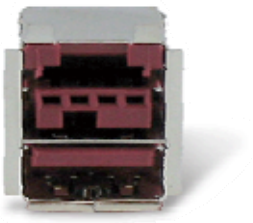


Note:

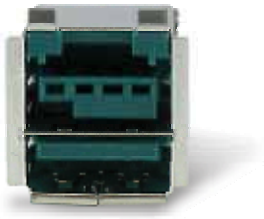
DIN Rail Mount Kit is a optional accessory does not include in the standard packing. If any accessory requests, please contact your vendor for detail.

Pin Assignments

The Powered USB connectors are a standard USB “A” type connector with 4 extra pins designed to supply higher voltages. In order to differentiate varieties of power voltage level, Powered USB connector built-in different connect-key with different color coding to allow the correct voltage cable connection.



+24VDC Voltage Keyed with Red coding



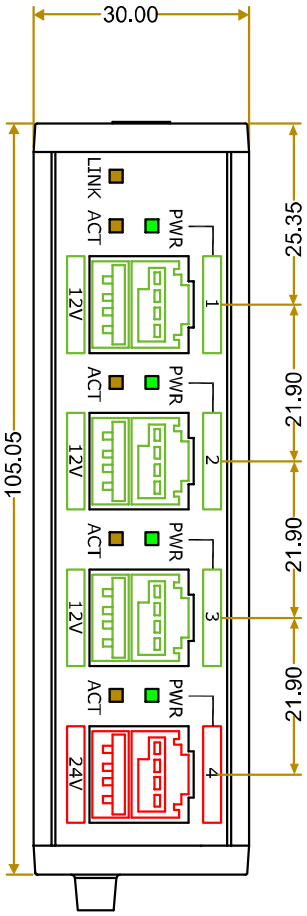
+12VDC Voltage Keyed with Teal coding

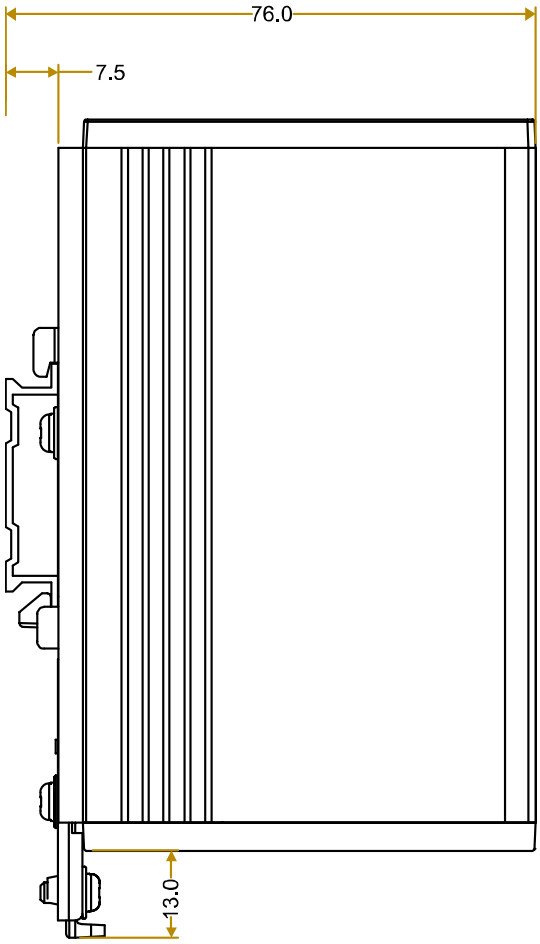
+5VDC Voltage Keyed with Black coding

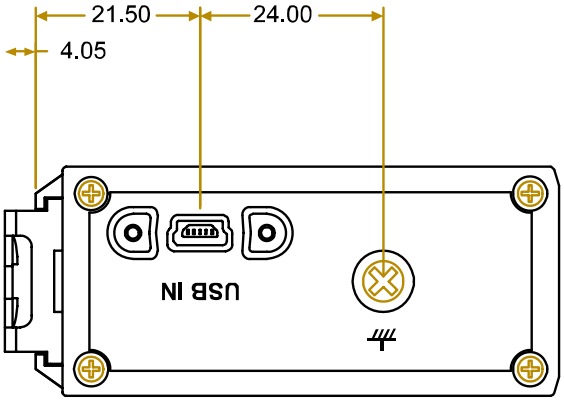
Pin No.	Signal Name	Port Type	Description
1	**VBus Power**	USB Type A Port	Bus power (connected to +5V)
2	**D –**	USB Type A Port	Twisted pair differential data line
3	**D +**	USB Type A Port	
4	**Ground**	USB Type A Port	Signal ground
5	**Ground**	Powered USB Port	
6	**VBus-Plus Power**	Powered USB Port	Bus power (connected to +24V, +12V, or +5V)
7	**VBus-Plus Power**	Powered USB Port	
8	**Ground**	Powered USB Port	Signal ground
9	**Connect Key**	Powered USB Port	Key to prevent incorrect connection
Shell	**Shield**	Powered USB Port	Cable (shield) ground

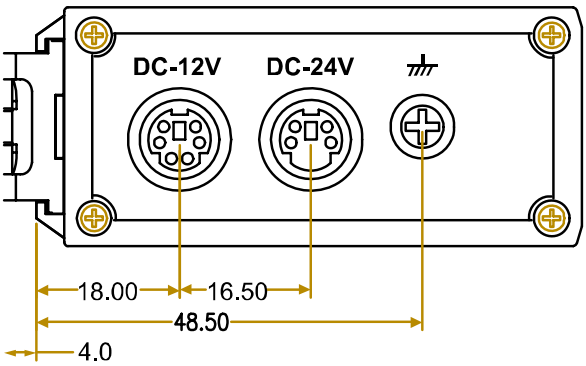
Mechanical Drawings

Please read the below images for Powered USB Hub's layout details.









Unit: mm

3.

Powered USB Hub Operation

After Powered USB Hub hardware installs properly in your system, the first thing you should do is that check operation system detect the Hub or not. This chapter introduces the method to confirm the Powered USB Hub installation and operation.

The following topics covered in this chapter:

- **Driver Installation**
- **Verify Powered USB Hub in System**
- **Powered USB Hub Operation**

Driver Installation

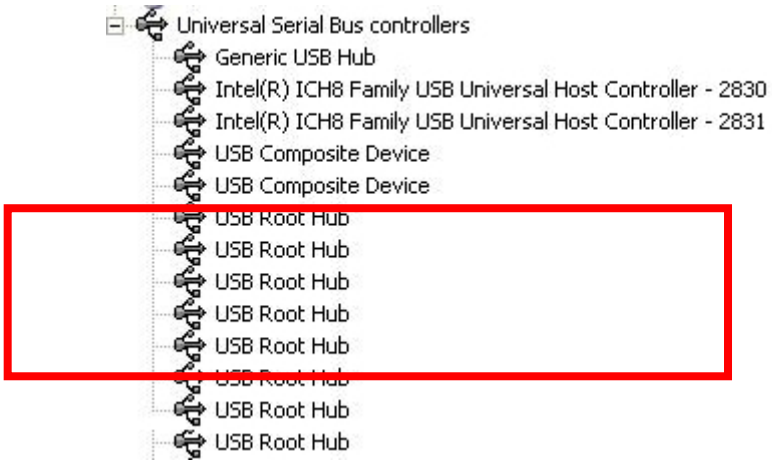
Once the Microsoft Windows 98, 2000, XP, 2003, Vista or 2008, Linux, or MAC operation system startup; Powered USB High Speed Hub will be installed automatically without driver installing.

In order to get better USB2.0 high speed data transmission performance, we strongly recommend upgrade your operation system to Microsoft **Windows 2000 service pack 4**, **Windows XP service pack 2,** and **Windows Sever2003 service pack1** or later version. Please visit Microsoft web site (http://www.microsoft.com) or use update function on your system to upgrade the latest version service pack of operation system.

Verify Powered USB Hub in System

Please check click on the "***Device Manager***" tab in System Properties, which you access from the Windows Control Panel. You should see an entry for the driver you installed under the Universal Serial Bus Controllers item.

Start > Controller Panel > System > Device Manager



You can find out both "***USB2.0 Root Hub Device***" under Universal Serial Bus Controllers item.

Powered USB Hub Operation

User can plug standard USB Type A male or Powered USB male cable into the Powered USB connector on board.

Standard USB Type A Male

Powered USB Male Type

Please press the key on the Powered USB male connector, then you can eject the cable from the Hub.

SAFTY FIRST

Unplugging or ejecting a device without first stopping them can often cause your computer to crash and lose valuable data. To safely unplug or eject any of the USB devices, firstly use the hardware wizard in the control panel to stop the devices. Or you can use the "**Safety Remove**" icon on the taskbar to quickly unplug or eject your devices.

4.
Troubleshooting

This chapter shows some problems that user came with usually. Also you can check it if the Powered USB Hub can not work properly in your system after following hardware and software installation steps.

Troubleshooting

1. If the Hub and devices connected to the computer do not seem to be working properly, please perform following basic troubleshooting steps:

1. Check that all cables are correct and securely connected.
2. Make sure the devices are turned on.
3. Make sure the devices are getting the power they require.
4. Make sure there is no problem with the Hub installation.
5. Please confirm Link and ACT LED action. If the Link LED light and ACT LED is off, it means your USB device is not working.

2. Computer failed to start after inserting the Powered USB Hub.

Turn off the computer, remove the Powered USB Hub, and try to restart the computer. If the computer starts successfully, it means that the Hub has not been inserted into the USB host port correctly. Please insert the Hub firmly into another USB port.

3. The USB cable has been extended and the device no longer works.

The length of the USB cable must not exceed 3.5 meters. Please do not extend the cable or a USB repeater must be used if the cable is longer than 3.5 meters.

4. Is it possible to connect current USB 1.1 devices to the Powered USB Hub?

Yes. The device will not, however, obtain the USB 2.0 high speed (480 Mbits/sec) but the USB 1.1 full speed (12 Mbits/sec) communication.

5. I can NOT get USB2.0 High Speed? Is there any driver update?

Powered USB Hub built-in USB2.0 high speed controller, and it runs USB2.0 high speed data communication when user connects this Hub to USB2.0 host port from computer. In addition, it is back compatible with USB1.1 full speed commuication when connecting USB1.1 host port.

- Please upgrade your computer USB interface to USB2.0 high speed specification.
- If your computer already built-in USB2.0 interface port, but it still can not run USB2.0 high speed commuication. Please upgread your operation system service pack to the latest one, because USB2.0 driver bounds with Microsoft Windows system. We suggest updating your operation system to Windows 2000 service pack 4, Windows XP service pack 2, and Windows Sever2003 service pack1 or later version.

Right click your mouse on "My Computer" and select "Properties" to check your operation system service pack version as below pictures shown.

6. Why not I can get enough power current to my Powered USB device?

Powered USB Hub +12 and +24VDC power output are sourcing from the power adapter. We provides standard 24V/2A and 12V/4A power adapter in the packing. If you need higer power current output to your Powered USB device, you should change another sufficient power adapter.

Pay attention that in order to prevent over current problem, each Powered USB port built-in PTC fuse. +24VDC powered USB channel built in 3A PTC fuse, and each +12VDC powered USB channel built in 1.55A PTC fuse. If your powered USB device draws higher current than fuse specification, the PTC will turn off the power for each individual port if an unusual overload is sustained.

If our current model or power specification can not satisfy your request, please contact us for the detail service.

7. There is no +24, or +12 VDC power output to Powered USB device.

Please confrim both 24V and 12V power adapters are all connection ready. Please refer to the chaper2 hardware installation for detail.

8. May I have different power voltage combination of Powered USB port on the Hub or further technical support?

Yes, we provide several models with different power voltage output for customer options. If our current model can not satisfy your request, please contact us for the detail service.

5.
Appendix

This chapter shows Powered USB Hub's core technologies and shows you how to contact with us for information about this and other products.

In this appendix, we cover the following topics.

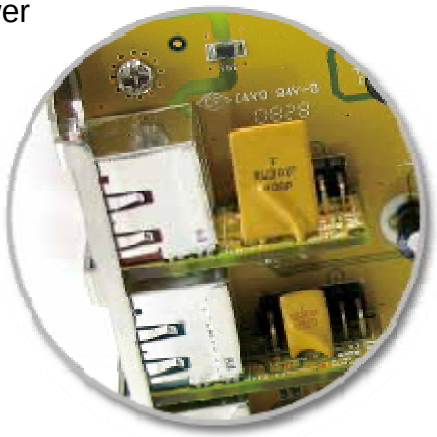
- **Core Technologies**
- **Contract Information**

Core Technologies

SUNIX R&D team is experienced and expert at many advanced technologies needed for manufacturing highly- reliable data communication products. This Powered USB Hub equips many hardware and software features for users easily equipping in kinds of environment. It's also the best solution for all of commercial communication and automation application.

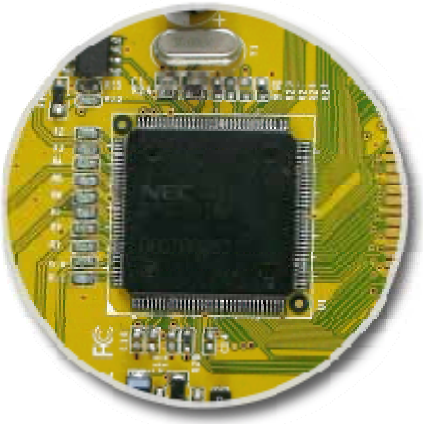
◆ Over Current Protection

In order to satisfy short circuit and over current protection feature, each Powered USB port is protected with a PTC (Positive Temperature Coefficient) reset able fuse. SUNIX PUB1300H built in 3Amp PTC fuse on +24VDC Powered USB port and 1.55Amp PTC fuse on +12VDC Powered USB port. The PTC may temporarily allow higher rate of power current to be drained. Typically, a PTC will shut off after approximately 15 seconds drawing more than the fuse tolerant current specification. The PTC will turn off the power for each individual port if an unusual overload is sustained.



◆ High Performance USB Controller

SUNIX Powered USB Hub built-in high quality NEC 4 ports USB2.0 controller, and it guarantee data transmission accuracy and maximize the data communication performance in kinds of application.



◆ USB Panel Mount Connector Design

With SUNIX screw-style panel mount connector and clamped cable design, PUB1300H build USB functionality into a secure and efficient fixed port. From basic port re-routes in a PC, to connections at podiums and kiosks, panel-mount cable is a great way to keep your connections extremely reliable, safety and professional.

◆ Rugged and User-friendly Design

SUNIX PUB1300H is a rugged aluminum chassis design, it meets IP30 protection standard against dust. Besides the slim form factor is idea for limited space applications. With DIN-Rail and Wall-Mount capability, this plug-and-play Powered USB Hub is easy to install on a DIN-rail, or in distribution boxes.

Wall-Mount

DIN-Rail

◆ **Processional and Complete Design**

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). In order to reduce the environmental background noise, we have added earth ground cooper on the Hub side panel. User can run the ground connection from the Hub ground screw to the grounding surface.

◆ **Green Product**

RoHS - The Restriction on Hazardous Substances prohibits the use of lead, cadmium, mercury, hexavalent chromium, Polybrominated Biphenyl (PBB), and Polybrominated Diphenyl Ether (PBDE) flame retardants. One of the main concerns of manufacturers of equipment is getting rid of lead, since lead is one of the main ingredients of solder. Our products are all "Green Products" and also satisfied with the EU's RoHS directive.

Contract Information

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, SUNIX services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support ..... info@sunix.com.tw
World Wide Web (WWW) Site for product information:http://www.sunix.com.tw